

Medical Emergencies at Summer Field Camp

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ABSTRACT

Medical emergencies associated with geologic field work and field—camp operations are potentially more serious than similar emergencies in urban settings because emergency services are not rapidly available in remote regions. A combined approach of preplanning response to medical emergencies, medical training by at least one member of the teaching staff, and safety training for all present at field camp is recommended for escaping medical dangers and legal liabilities.

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INTRODUCTION

At a recent geological meeting, several professors related incidents that occurred during operations at University field camps and requested opinions on out-of-hospital management of injuries. The subject of liability of the teaching staff, department, and university also arose. The latter subject is beyond the expertise of the authors, but we will suggest a few questions that we would pose to university administrators were we in field- camp-staff positions.

The following sections are based largely on a two-day Wilderness Emergency Medicine course which we have designed and taught to United States Geological Survey personnel for seven years. The subjects mentioned are based on review of accident records and frequency of emergencies seen by us. This article does not attempt to cover detailed treatment of any specific medical problems, but will offer specific considerations for cases in which a remote setting might change a standard first-aid approach. The opinions expressed in this article are strictly our own, and there is no implied endorsement of our opinions by the United States Geological Survey.

GENERAL CONSIDERATIONS

OSHA standard 1910.151 requires that “a person or persons shall be adequately trained to render first aid” if emergency medical care is not “in near proximity to the work place.” The phrase “near proximity” is taken by the United States Geological Survey, for example, to involve a travel time of less than 15 minutes. In addition, OSHA standard 1910.151 requires that “First aid supplies approved by a consulting physician shall be readily available.”

The above language is loose enough that we suggest field camp personnel obtain clarification from the university as to “near proximity,” “adequately trained,” and employer (that is, who made the assignment of work beyond near proximity to medical facilities). If EMT (emergency medical technician) training or higher level is considered to be adequate, it should be remembered that certification to act as an EMT or paramedic is given by individual states and that restrictions on treatments allowed vary from state to state and usually require operation under a physician’s license. Given the number of people at a field camp and the number of potential problems, we recommend EMT-level training for at least one member of the staff and further suggest that the EMT personnel should regularly practice their skills, especially just prior to the opening of field camp. Such practice might be obtained by serving a monthly shift at a cooperating emergency room or at least the university’s clinic. In addition, all students should be encouraged to take a Red Cross First Aid course prior to the start of field camp.

We do not know of a commercially available first-aid kit that would be adequate to handle all potential injuries in a field-camp setting. We suggest that this item be given considerable thought, and that two levels of kits be considered: one for day-pack use, and a more extensive kit for base camp or vehicle use. If someone has been trained in oxygen therapy, a D cylinder of oxygen and standard adjunctive equipment should be included with the comprehensive kit because, when properly administered, oxygen can buy time in the case of nearly all serious medical emergencies. Examples of day-pack and base-camp medical supplies are given in Table 1.

In addition to training and equipment, some degree of preplanning should be mandatory. At a general level, all students and staff members should know who the medically trained personnel are and what the basic guidelines are should a problem arise. For example, it should be camp policy that fall victims not be moved without the supervision of medically trained personnel unless the injured person is in a dangerous location. A question that needs to be considered is whether camp authorities want someone to stay with the injured person and wait for others to start a search or prefer that the injured person’s companions seek help immediately? If radios are carried, this decision is not nearly as difficult to make.

Preplanning for the staff should include several items. The personnel designated in charge of medical problems should be informed about any longstanding medical problems of anyone in camp, including medications taken and consequences (especially diagnostic symptoms) if medication is not taken. All members of the staff should know what medical facilities are available in the field area and the general level of services offered by each facility. There should be a plan which would optimize access to emergency response personnel. Field operations may well take place in more than one emergency jurisdiction and this should be known in advance. Some summer camps for children prearrange treatment and transportation with local emergency personnel. Such prearrangements are valuable for both minors and those who are incapacitated to a point where they are unable to give consent for treatment. If groups are working in remote areas, radio equipment is necessary to both speed and guide medical assistance to the scene of an emergency. Medical helicopters with trained personnel are readily available in most parts of the United States, and ideally at least one radio should be obtained that can be used to talk directly to the helicopter.

Patient care can be optimized and legal liabilities minimized by a set of written standards or protocols which cover the likely types of problems to be encountered and the optimal response to those problems. Proper preparation of such a document is a major task, but can be well
I. To carry in pack (will fit in a 6" x 10" sample bag)
A. 4" x 4" dressing 6
B. 4" Kerlix or Kerlix 2 rolls
C. Multitrauma dressing (5" x 9") 2
D. Triangular bandage 2
E. 1" band—aids 6
F. Antiseptic unit 1
G. Eye dressing unit 1
H. Small roll 1/2" tape 1
I. 3" Elastic bandage 1 roll
J. Wire splint (30" x 3 1/2") 1
K. #4 Airway +
L. Ophthalmic irrigation unit 1
M. Tweezers 1
N. Small scissors 1
O. 6" by 10" sample bags* 3
P. Rescue blanket 1
Q. Snake bite kit (if in snake area) + 1

Table 1. Suggested medical equipment for geologic field work.

II. Additional supplies in vehicle or at camp
A. 4" x 4" dressing 10
B. 4" Kling or Kerlix 4 rolls
C. Multitrauma dressing (5" x 9") 4
D. Multitrauma dressing (9" x 36") 2
E. Sterile burn sheet 1
F. 1" tape 1 roll
G. 1/2" tape 1 roll
H. Triangular bandage 2
I. Band-aids 1 box
J. Betadine soap bottle
K. Sunburn lotion with benzocain 1 can
L. Cotton swabs 1 pkg.
M. 3" elastic bandage 3 rolls
N. Ladder splint 1
O. Board splint (36" x 5") 2
P. Cervical collar (medium) 1
Q. Large scissors (crash type) 1
R. Blood pressure cuff 1
S. Stethoscope +
T. Bite Stick +
U. #3 airway 1
V. Pocket mask with oxygen port +
W. Oxygen cylinder (D or E) with regulator +

* These can be filled with sand to immobilize a neck injury.
+ Recommended only after training in the proper use.

occur in even healthy persons at elevations as low as 2500 m or in agents a serious threat to life in most outdoor areas during the summer. Again, precautionary measures should be stressed during the safety orientation. An excellent summary of these steps is given by Peterson (1961). Knowledge of CPR or at least artificial respiration is especially valuable if someone is knocked out by lightning because the respiratory muscles are often paralyzed long enough to cause death. Although artificial respiration alone may successfully revive a victim, there may be several medical complications that won’t become obvious until hours after the accident. Therefore, the revived victim should be transferred to professional medical care as rapidly as possible. Finally, if a group is dispersed during an electrical storm it is likely that, even if one person is struck, others will be unaffected and able to render first aid.

Students should be told that essentially all streams in the world are contaminated with Giardia and that other water-borne infections are possible. Therefore, all drinking water should be purified or obtained at camp. Boiling for 20 minutes is still the best way to purify water. Halogen preparations, particularly iodine, are also effective, but there are reports of shelf-life problems with some products (Kahn and Visscher, 1975).

Burns, other than sunburn, are not common field problems. However, even moderate burns can be life-threatening, due to fluid loss, infection, or lung complications. These problems are not usually apparent immediately after the accident, and, therefore, any burns of the face, large areas of second degree burn (such areas are blistered), or burns that interrupt the skin should be seen by a physician as soon as possible. Non-prescription first aid creams should not be placed on burns that break the skin because such preparations increase the danger of infection, and are usually scrubbed off by emergency room personnel.

Both hypothermia (too low a body temperature) and hyperthermia (too high a body temperature) can pose a threat to life. In general, proper clothing and keeping dry can prevent hypothermia. Students may not be aware that hypothermia is a common summer problem in the mountains and areas of high diurnal heat change, therefore, the subject should be covered in the safety orientation if the field camp is in such an area. Hyperthermia is fairly rare, but truly life-threatening. The person typically has warm, dry skin and a decreased level of consciousness. The body’s ability to cool itself has been lost and cooling by wet soaks is necessary to keep brain damage from occurring.

Finally, we offer a few general treatment principles for emergency situations. Panic and confusion have an adverse effect on the physical as well as the emotional state of an injured person (even if he seems to be unconscious). Therefore, anyone who is obviously upset should be removed from the scene. It is best to keep with the victim only those people needed to render effective treatment. If manpower and time permits, someone should record as much information as possible (such as pulse and respiratory rates, level of consciousness, spontaneous movement, and the time of the observations) Any changes as a function of time should be noted, and all the information should be given to the attending physician. The data may be very valuable in assessing the severity of injuries and the type of immediate action needed.

Obviously, none of the above subjects are covered in depth. The discussion is intended more as an outline of problems that might be most common or for which there may be special considerations by virtue of the remote setting of field work. More information on most of the subjects can be obtained from *The American College of Orthopedic Surgeons, 1981.*

**REFERENCES**


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